

WHAT IS CLAIMED IS:

1. An electronic device comprising:
an electronic component;
a metal substrate having a recess large enough to fully receive the electronic component; and
a wiring board having a surface area larger than the area of the opening of the recess and having a wiring pattern formed on the top surface thereof,
wherein at least a portion of the surface of the wiring board is fixed to one of the top surface and the bottom surface of the metal substrate, and
wherein the electronic component is mechanically fixed to the bottom of the recess while being electrically connected to the wiring pattern.
2. An electronic device as claimed in Claim 1, wherein the wiring board comprises another wiring pattern on the bottom surface thereof, and wherein the wiring pattern on the top surface of the wiring board is electrically connected to the wiring pattern on the bottom surface of the wiring board via a contact formed through the wiring board.
3. An electronic device as claimed in Claim 1, wherein the metal substrate comprises a window that is opened from the bottom of the recess through to the bottom surface thereof, wherein the wiring board is fixed to the bottom surface of the metal substrate so that a portion of the wiring pattern is exposed in the recess through the window, and wherein the electronic component is

electrically connected to the wiring pattern exposed in the recess through the window using a bonding wire.

4. An electronic device as claimed in Claim 3, further comprising a metal lid fixed to close the opening of the recess.

5. An electronic device as claimed in Claim 1, wherein the wiring board is fixed to the top surface of the metal substrate in a manner such that the wiring board closes the opening of the recess, and wherein the electronic component is connected to the wiring pattern using flipchip bonding.

6. An electronic device as claimed in Claim 5, wherein the metal substrate comprises a main substrate portion having a through hole that is opened from the top surface to the bottom surface, and a metal lid that closes the opening of the through hole on one side of the through hole to produce the recess from the through hole.

7. An electronic device as claimed in Claim 1, wherein the wiring board is fixed to the metal substrate using one of diffusion bonding and fusion bonding, in which a surface treatment film made of gold, silver, tin, or a combination thereof is formed on each of a surface area of the wiring pattern and a surface area of the metal substrate to be bonded together and the surface treatment film of the wiring pattern and the surface treatment film of the metal substrate are forced into contact under a predetermined condition.

8. A method for manufacturing an electronic device, the method comprising:

a first step for fixing a wiring board on a metal substrate having a hole of a predetermined configuration in a manner such that the wiring board is partially exposed in the hole;

a second step for electrically connecting the electronic component to the wiring board exposed in the hole with the electronic component placed in the hole; and

a third step for fixing a metal lid to the metal substrate to close the opening of the hole.

9. A method for manufacturing an electronic device as claimed in Claim 8, wherein the second step comprises fixing the electronic component to the metal substrate on the bottom of the hole, and electrically connecting the electronic component to the wiring board through the window provided in the bottom of the hole using a bonding wire.

10. A method for manufacturing an electronic device as claimed in Claim 8, wherein the second step comprises flipchip bonding, and wherein the third step comprises fixing mechanically the electronic component to the metal lid.

11. A method for manufacturing an electronic device, the method comprising:

a first step for forming, in a metal substrate, a recess to receive an electronic component;

a second step for electrically connecting the electronic component to a wiring board; and

a third step for fixing the wiring board to the metal substrate in a manner such that the electronic component is received in the recess to close the opening of the recess,

and for mechanically fixing the electronic component on the bottom of the recess.

12. A method for manufacturing an electronic device as claimed in Claim 11, wherein the second step comprises flipchip bonding.